



QST NFL



Sharing information of interest to Radio Amateurs in North Florida

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North Florida Amateur Radio Society (NOFARS) Update

Billy Williams, N4UF

JAX RADIO FREE FLEA ON HOLD

We are working with our hosts, Terry Parker Baptist Church, to schedule a Saturday once problems subside. Late May is possible if virus cases peak by Easter. The large parking area at the church and FREE Flea layout modifications will minimize risk when outdoor gatherings become relatively safe again. Watch nofars.net.

MEETING STATUS

NOFARS meetings at Hogan Baptist Church will resume when it is safe to assemble in groups of ~40-50 again.

Watch nofars.net and monitor 146.7 repeater.

GOOD CHEAP ENTERTAINMENT

Operating events include weekend state QSO Parties with Georgia on April 11-12 and Florida on April 25-26. Work as many of Georgia's 159 counties as you can and then become a center of attention during Florida QSO Party.

Meet On-the-Air

Don Ahlskog, K4EAE, Daytona Beach, FL

Don't cancel your Club Meetings, instead hold them On-The-Air on the local repeater.

Gainesville Hamfest Cancelled

Larry Rovak, WB2SVB

Due to the Corona Virus the Gainesville Hamfest on April 18, 2020 has been cancelled

Bay County Suspends all In-person Activity

Matt Kennedy, W9NDN, Bay County ARES EC

On 03/21/2020 Bay County has first confirmed case (non resident) of COVID-19.

Bay County ARES (BCARES) has suspended all in person activities and meetings until further notice. This was done out of an abundance of caution.

Our in person activities will be replaced by on air activities like net control practice, D-Rats, winlink, and a local D-Star net. This is a perfect opportunity to focus on operating with different modes and formats. I am in regular contact with EOC for any needs or changes.

Status from NASSAU CO ARES

Bud Sinor, KA3OGG, EC Nassau Co. FL.

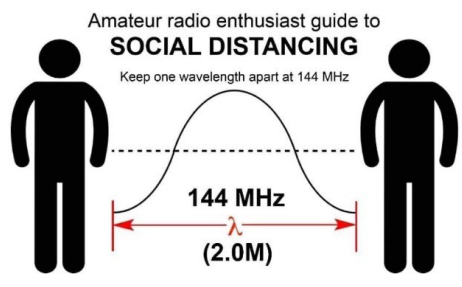
EOC is at Level II with increased staffing. The ARES group is staffing the County Watch Office for Nassau Co EM. Several of our members have compromised immune systems themselves or their families do, so we have instituted a "Work From Home" option if they prefer. ARES is actively involved in the county preparations and emergency management. We are assisting with answering citizen questions on the telephones at the EOC.

In Nassau Co, we have still had only one Covid-19 positive patient, the Baptist Nassau hospital is open and has a triage entrance for flu patients. Public Beaches were closed today, most stores not supplying food or medical supplies are closed.

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Email your QST NFL input to n4gl.marty@gmail.com
Marty Brown, N4GL, Editor



Amateur Radio Operators Key Part of Effort To Create Emergency Ventilators

Gordon Gibby MD KX4Z

An incredible array of skilled amateur radio operators are working to assist in the creation of an emergency ventilator to potentially save lives in the COVID-19 pandemic. They have brought the project almost to the point of manufactured ventilators at extremely low cost, less than \$400, with parts from Home Depot or Lowes. Without their help, this project would have been making much less progress, leaders say.

About 10 days ago Sem Lampotang Ph.D., head of the University of Florida Center for Safety, Simulation, and Advanced Learning Technologies (CSSALT) asked amateur operator Gordon Gibby for help -- and within a couple days, Gordon realized the need was pressing. An emergent request for hardware and software developers on the BITX20 online forum brought a large number of responses and a groups.io site was created to allow the developers to discuss quickly. (Please don't post extraneous comments on that extremely busy site that is key to this development). There are over 100 participants and over 600 messages in one week.

Multiple advances have been quickly made, while torture testing of the PVC hardware of the low-cost modular ventilator continues unabated at the University of Florida by engineer Dave Lizdas. Sem's design literally uses a common lawn sprinkler water valve to turn on and off pressurized blended oxygen/air to ventilate a critically-ill patient's lungs, and the measurement and control of that process is being handled by the hardware and software created by the amateur radio-led team. Amateur radio 13.8 VDC power supplies drive either transistors or MOSFETs to power the solenoids of the lawn sprinklers, on command from an Arduino Nano micro-controller. Software development and printed circuit board designs are galloping forward on a github site as well as the groups.io site, with Ashar Farhan of BITX fame doing the first printed circuit boards and now providing software as well, Marcelo Veranda doing a huge amount of software and Jack Purdum W8TEE watching over much of it.

A major problem the teams have faced is the tightening supply crunch for needed equipment, worsened by lockdowns in many nations. Ashar had to have sprinkler valves "smuggled" to him for testing. Differential pressure transducers to allow complicated flow measurements are in very short supply throughout the United States and the team has struggled to make the de-

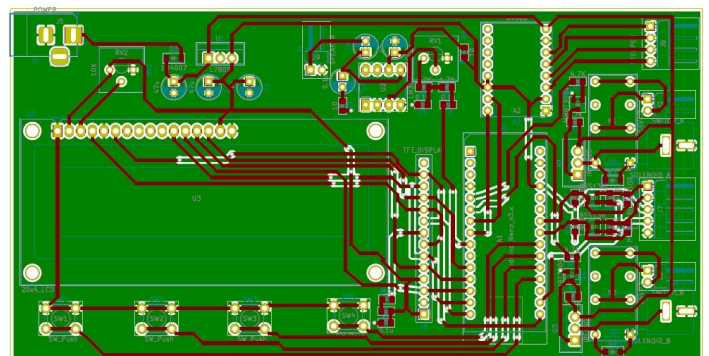
sign capable of working with whatever displays or components are available. A first prototype complete ventilator was constructed using a BITX40 RADUINO that was re-purposed from being an external VFO for a Heathkit SB-102 -- and is still running one of the test ventilators through continuous torture longevity tests. You can watch multiple released videos here: <https://simulation.health.ufl.edu/technology-development/open-source-ventilator-project/> and here: <https://www.youtube.com/watch?v=4xX6sCamPJw> Multiple other manufacturers and industry giants are now coming alongside the University of Florida team, which welcomes parallel and diverse designs using their concepts.

FCC Part 97.1 cites as one reason for the existence of amateur radio as the need to maintain a trained pool of electronics experts -- and in this case, amateur radio operators have come through in droves!!



The "Tupperware Controller" now running extended torture tests was created in 3 hours of hardware re-purposing and 6 hours of software development.

A proposed printed circuit board for the controller



We are Guests!!!

By Scott Roberts, KK4ECR, NLF Section PIO

As Amateur Radio Operators and being a part of Amateur Radio Emergency Service, we have a standard of excellence that we should maintain. Today, I want to reiterate two phrases that we, as ARES Members, should keep at the forefront of every event or activation in which we participate. Those phrases are, **"We are GUESTS in our Served Agencies 'home',"** and **"We serve at the pleasure of our Served Agency."**

Very recently, in North Florida (I will not say exactly where), an ARES organization was informed that Amateur Radio operators would not be needed to support a fairly large event in which Amateur Radio operators had worked in the past. The organizers of the event did not initially give a reason why Amateur Radio operators were not needed but made it very clear that operators would not be needed.

On the day of the event, this Amateur Radio organization, showed up and as it was told to me by the event organizers, forced their way into the event operations. These operators were directly told that they were not needed and were asked to leave. They did not!

This actually happened and I tell this story to bring up a couple of very important points.

First, **we serve at the pleasure of our served agencies.** In this case the "served agency" was the event organizers. If we are told by an organization that we are not needed, or that they do not want us to support their event or situation, then we are to take that at face value, and not serve. We can be ready to support and serve, but we are NOT to force our way in.

Second, **we are GUESTS in the "home" of our serve agencies or organizations.** We serve where, how and when they want us to serve. We come into their domain with humility and an attitude of being a servant. We are not there to take over, we are not there to run the show; we are there to support and serve.

As a result of this situation, it is very possible that that ARES organization will not be invited to support that and other events in the future. The organizers of that event are part of other served agencies that Amateur Radio has supported, and the relationship is damaged. This is what happens when we forget our true place in supporting our Served Agencies.

PIO's – Our job is to know when situations like this could potentially happen and act as liaison between our organizations and our served agencies to make sure that the relationship does not get damaged.



EC's – Your job is to make sure that your organization NEVER gets in a position where this happens. If your served agencies or served organizations do not ask for, or specifically decline your assistance, then that is the answer. Do not force your way in.

I write this article for another reason. We are currently in very crazy times. Our served agencies are working overtime. At this point in time, this is not a communications emergency. It is very likely that Amateur Radio will not be needed. This is not the time that we try to force our way in. Contact your served agencies, let them know that we are here and available for whatever they may need.

Hints and Kinks for Net Control Stations

Dave Davis, WA4WES, Net Manager NFL ARES Net

The following are some Hints from the Level II of the Amateur Radio Emergency Communications Course

1. If the net is a scheduled net, start on time.
2. Use a script when possible. This promotes efficient net operation.
3. Be friendly yet in control. Speak slowly and clearly with an even tone. Speak with confidence, even if you are inwardly nervous
4. Write down all calls.
5. Ready you radio owners' manual and know your radio before an emergency occurs.
6. During check-ins, recognize participants by name whenever possible. This boosts morale
7. Frequently identify the name and purpose of the net.
8. Don't be afraid to ask for assistance if you need it. Have an alternate NCS
9. Keep transmissions as short as possible
10. Transmit only facts.
11. When necessary use standard ITU phonetics.
12. For voice nets, use plain English. Do not use Q signals
13. If the net has been quiet for more than ten minutes, check on operator status.

One of the functions and duties of an NCS is to keep a current list of stations checking in, where they are, their individual assignments, and what capabilities they have.

Florida Emergency Communications Conference Holds One of Largest Amateur Radio HSEEP Exercises This Year

by Gordon Gibby KX4Z

Just before COVID-19 became the most intense problem for the nation, fifty hams met in Gainesville Florida on Saturday Feb 29th, 2020, to get a full day of training and then to carry out a 3-hour full deployment exercise conducted as much as possible to Homeland Security Exercise Evaluation Program standards -- and they had a blast!

An additional smaller group arrived a day earlier and stayed an extra day later to take the ARRL EC-001 course, required to advance up the ARES(R) Taskbook Levels. Jim Bledsoe KI4KEA and Gordon Gibby KX4Z conducted that class, including some incredibly intense training on high speed traffic net control duties, and a faithful group of local VE's (Alan West WA4JD, Larry Rovak WB2SVB and Vann Chesney AC4QS) held the exam session. The Alachua County EOC graciously allowed us to use their Conference room for that course, sanctioned by the ARRL national headquarters.

Last year's Exercise Scenario was.....
a rapidly spreading fatal respiratory virus!

Hmmm.....

Look out next year! Our scenario this time was.....
exploding underground high-pressure gas lines.

On Saturday, participants arrived to a cheery greeting from Susan Halbert KG4VWI and got acclimated to filling out ICS-211 check in sheets, used each day. Every participant was handed a free 200+ instruction text with material from the lecturers. (That text is now available on Amazon.) Those participants listing Florida Baptist Disaster Relief as one of their possible service areas, got an additional free text devoted to specialized training to move survivor messages back to loved ones outside the disaster theater, through NTS, RRI, SHARES, or WINLINK. Some picked up pre-ordered digital radio cables, for the cost of materials. This was a low-budget Conference!.

After a short plenary session, two tracks ensued, a "beginner" and a "local leader" track. The beginner track included expanded teaching on Radiograms, voice techniques, nets, and a 2-hour hands-on session making live connections to HF and/or VHF Winlink gateways **present right there** in the conference room. That was a huge hit, as 10 tables were furiously making connec-

tions as fast as they could. The room was abuzz! The "local leader" track got shortened versions of those skills and a heightened emphasis on servant leadership skills, and a complete walk through where everyone in that track literally constructed the skeleton of a real, full, HSEEP deployment exercise. That included listing one or more of the 32 FEMA Core Capabilities (<https://www.fema.gov/core-capabilities>) that the hams would be supporting, specific objectives to be achieved, and a scenario. If those plans are filled in, each leader can go back and take their team through a well documented deployment exercise.

Already, the participants had put in two hours of real radio practice (which they thoroughly enjoyed) -- but the real test arrived on Sunday afternoon when the group reassembled (and filled out another ICS-211 check-in sheet). They were divided into 7 teams, each of which had an assigned Supervisor representing whatever "authority" was in charge of their assigned service location. Each team selected their own "unit leader". Jeff Capehart W4UFL introduced them to the ICS-201 Exercise and explained the Envelopes their supervisors had to open at each "session" in the Exercise, giving them new hurdles, tasks, and issues for each 45-minute portion of the deployment exercise. The Alachua County Emergency Manager was so impressed with the construction of this Exercise that he brought his entire department to act as "Evaluators" with individual assignments to the Units. Dave Welker W2SRP volunteered from Marion County to fill in another Evaluator spot.

Right after the Briefing, the teams dispersed to their assigned locations throughout western Gainesville--- not allowed to use cellphones to find them, but dependent on paper maps and photos just as they would in a real communications emergency. Once arrived, they were timed on their setup of VHF and HF radio stations, and on their joining the Command Net -- which was assumed by the first (unlucky) gentleman to show on frequency -- and that gentleman did a **fantastic job**, keeping a full ICS -309 log without fail for the entire Net.

An incredible amount of pre-planning and practice had been carried out by volunteers from the NTS and RRI groups throughout multiple states, including Ohio and Michigan, and Florida volunteers including the NFL Sec-

Continued on next page.....

tion Traffic Manager Helen Straughn WC4FSU and John Wells W4CMH -- as well as RRI volunteers from Ohio & Michigan were right on ICS-205-announced HF frequencies on 80, 40, and 20 meters. These capable people worked hard to help participants get voice messages across difficult communications channels. Many thanks to Jim Wades WB9SIW and Matthew Curtin KD8TTE-- having spent hours in the weeks before the Conference testing propagation alternatives.

Meanwhile, the teams were simultaneously carrying out equipment and antenna duties, and moving traffic via VHF and HF WINLINK systems -- we had a far higher success rate at the HF WINLINK traffic than ever anticipated. The exercise made one thing crystal clear: **we could easily overload the crowded 97.221B narrow ACDS segments even with a small exercise and only 50 participants --- station after station remarked that they had to WAIT IN LINE to gain access to the HF stations that propagation favored during the difficult afternoon hours.** In discussion afterwards, Craig Fugate KK4INZ (former FEMA head, but now enjoying just being an ordinary ARES(R) volunteer) pointed out that most of the communications has to get through during daylight high intensity working hours -- so if amateur radio can't get them through then....it is less applicable. When Session III ended, the teams packed up their gear and headed back for a much-deserved "hotwash" discussion. We had some "learning moments" for the exercise builders and participants alike. Some items weren't well-enough explained; some tasks were just HARD -- and the HF participants were fairly unanimous that the SSB signals from our deployed teams were

much weaker than those of other Florida stations during the same time frame. More effective antennas and stations on HF may be important. Many participants were very unfamiliar with "packet" VHF techniques and we didn't cover that in any depth. Lots of lessons come out of the data, which is being rigorously analyzed.

TRAFFIC: During the 3 hour exercise, on top of setting up and handling obstacles, the participants collectively moved 28 pieces of voice traffic on VHF; 7 pieces across HF channels, 6 traffic via VHF WINLINK gateways and a surprising 22 messages across HF WINLINK.

GRADING: There were 26 Objectives that were gradable, and 3 that were not well explained and were tossed out of the analysis. HSEEP prescribes a grading scheme: Of the 26, 12 were Performed without challenges, 4 that were performed with Some challenges; 3 that were performed with Major challenges, and 7 that were frankly unsuccessful by a majority or all of the teams ("Unable"). Because the objectives are specific, measurable, achievable, relevant and time-bound (S.M.A.R.T.), future exercises can test the same objectives and demonstrate progress.

The entire Exercise is already written up in the formal FEMA HSEEP format and will become available soon on the NFARC website: <https://www.qsl.net/nf4rc/> Due to the COVID-19 virus, this may be one of the last major amateur radio conferences and full deployment exercises that can be carried out this year. This exercise featured a strong connection between ARES(R) and traffic handlers -- something we've pushed hard. We all learned a LOT, and we can teach, train, and practice even better next year as a result.



Teams were generally FAR better equipped for deployments this year -- with better "furniture" and cover systems and much faster antenna set-ups. FLB-2 Unit is shown here.



Larry Whited AB4NX (and his wife) and others traveled all the way from Georgia to train and participate.

What a well-thought-out Go-Box!!! Even has WHEELS!!



Look closely and you'll see a fellow who has run the REAL THING many many times.

EWEdhoria Radio Club Antenna Day

by Bert Garcia N8NN

The EWEdhoria Radio Club in Summerfield, FL held an Antenna Day on March 7. Since all club members live in an antenna restricted community, the emphasis was on portable and stealth antennas. The goal was to try various designs and measure the performance using the Reverse Beacon Network RBN <http://www.reversebeacon.net/main.php>, the Weak Signal Propagation Reporter Network WSPRnet <http://wsprnet.org/drupal/wsprnet/map>, and several antenna analyzers. All the antennas installed are excellent for emergency situations as well as Parks on the Air POTA <https://parksontheair.com/>. All radios were battery powered running 50 watts on the RBN and 5 watts on WSPRnet. Signal reports were obtained from the west coast of the USA and many locations in Europe on 40 and 20 meters.

The club members installed these antennas:

1. Homemade 20 meter delta loop.
http://www.w5sdc.net/delta_loop_for_hf.htm
2. Transworld vertical dipole on a tripod.
<https://www.dxengineering.com/parts/dxe-tw-2010l-p>
3. Yaesu ATAS mobile whip mounted on a large stainless steel BBQ grill.
<https://www.gigaparts.com/yaesu-atas-120a.html>
4. Wolf River base loaded vertical on the ground with radials.
<http://www.wolfrivercoils.com/>
5. Alpha Antenna vertical on a tripod.
<https://alphaantenna.com/product/alpha-antenna-hf-portable-dx-emcomm/>
6. Homemade HF Stick dipole on a 25 ft printer's pole.
<https://mfjenterprises.com/search?q=2240>

There antennas were present but not installed:

1. Homemade end-fed 53-ft wire with LDG RU-9:1 Unun.
<https://ldgelectronics.com/index.php/products/accessories/baluns/>
2. Homemade 10 meter loop with PVC mast and fiberglass spreaders.
http://www.amateurradio.bz/10_meter_loop_antenna.html
3. All band wire mystery antenna.
<http://www.iw5edi.com/technical-articles/w5gi-mystery-antenna>
4. Homemade base loaded 19-ft vertical.
<https://www.w8ji.com/gotham.htm>
5. Homemade 36-ft vertical with MFJ-993BRT remote tuner.
<https://mfjenterprises.com/search?q=993brt>

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An Antenna Day is a good opportunity to learn about antennas and to practice installing emergency antennas should the need arise.



L to R: Bert N8NN, Randy N1JOO, George WA4GGW, Bob KC8MLB, John KN4JUN, Bob, Jerry KN4JER, and seated Pete N4CQN.



Pete N4CQN monitoring the WSPRnet.



Bob KC8MLB with his Transworld vertical dipole. His Alpha Antenna vertical is on the left.

Bob KC8MLB with his home-made HF Stick 20 meter dipole on a painter's pole.



Yaesu ATAS BBQ vertical by Randy N1JOO. Many contacts were made. The Wolf River vertical by Pete N4CQNH is in the background.

Alachua County Conducts Last "Saturdays-in-the-Park" Exercise For A Long While

Gordon Gibby KX4Z

Our group managed to carry out a very simple drill -- asking people to put up an emergency antenna at a Park or at their home -- just a week or so before everyone entered "lock-down" -- and we had a great time! This had been on our "to-do" list for a year...but kept being put off. Finally, it was scheduled for Saturday, March 21st..... And then came along COVID-19. At that time the County was asking for no groups larger than ten, so we told everyone it was optional and they could do it from home.

On the appointed day, we had seven participants, exactly *two* of us at the Squirrel Ridge Park at Gainesville-- which turned out to be closed, so we worked from the parking lot. I brought the Travel Trailer after a week of re-fitting; Leland Gallup arrived in a car with a fold-up table and chair and his Chameleon fast-setup antenna. First we had a training session on how to put on surgical masks, and Leland and I wore surgical masks the whole time and stayed about 6-12 feet apart the whole time. Leland commented that working to put up equipment was different when wearing that mask!

Meanwhile, joggers and other exercisers were showing up at the park and doing their thing, no one but us wearing *any* protective gear. Leland put up his new Cha-

meleon vertical with ground radials and had notable success (particularly on higher bands) and was able to connect to multiple winlink gateways and with a relay, he made it into the Florida ARES net at 9AM. I decided to ditch my pre-prepared off-center dipole and instead build a new 135-foot end-fed multiband half-wave on the spot. That took about 25 minutes to stretch out, measure, cut and hoist the wire via the fiberglass mast on the Travel Trailer, and use the new hand-made 1:49 Balun. The results were even more gratifying -- using that antenna I could reach out on 80 meters, made it into the Florida ARES net even with a malfunctioning coax connector periodically disconnecting the antenna. (Got that coax removed after a few minutes of detective work!--benefit of exercises!) Made many winlink connections, even to my home station now 12 miles away on 80 meters! I judged that the end-fed 135-foot wire worked as well as any of my home antennas. Leland judged that the vertical was AMAZINGLY easy to set up, and worked well on bands above 80 and passably on 80 meters.

Others in the group put up antennas at home, exercising their skills as well. Leland and I each tore down our setups in about 10 minutes each. A fun exercise!!



Craig Fugate KK4INZ's home backyard station -- sweet!



Mike Ridlon's (K4MVR) improvised antenna.

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Leland Gallup AA3YB (at proper viral protection camera distance) operating his station in mask and gloves.



Gordon Gibby KX4Z operating from the inside of the Travel Trailer in viral protection gear.



Very fast setup Chameleon antenna, from AA3YB.

Spring Cleaning and Maintenance at the LARA Clubhouse

Frank Anders, KK4MBX

Early March, before COVID 19 restrictions were imposed, brought nice weather and spring to central Florida. Lake Amateur Radio Association members took to the outdoors to clean up the LARA clubhouse and grounds. Our projects this year included trimming the bushes and trees, Antenna Maintenance and power washing and painting the clubhouse. Pictured are:



Gary KJ4HYV, Chris KM4RNR
Teresa KN4CFJ



Dean, KM4QMB



Tom, KN4UEW



Roger, KI7HOT



Gary, KJ4HYV
Gary KN4SQC



Jay, N4KXO



Lenny, KN4MBN



QCWA Chapter 62. Ocala

Ken Simpson

Ocala FL Chapter 62 of the Quarter Century Wireless Association met on February 27 at the China Lee Buffet in Ocala. The main theme of the meeting was the presentation of awards.

Ken Simpson, W8EK, National Director and Chapter President presented awards as follows:

65 year Award to Charles Lukas, W1DOH (Top)
65 year Award to Dick Schauer, W8DYV (Bottom)
65 year Award to Leon Couch, K4GWQ
Century Award to Rhyn Killian, KA1CX

Chapter 62 also holds a net every Saturday morning at 9 AM local time on 3940 KHz. All are welcome and encouraged to check in.



Gainesville Amateur Radio Society (GARS) Winter Field Day

Shannon Boal, K4GLM

The Gainesville Amateur Radio Society has participated in Winter Field Day since 2008, when we participated with the club in Palatka. That was the event's inaugural for SPAR (the Society for the Preservation of Amateur Radio). Every year since then, GARS has participated; enjoying food, fellowship, and the chance to compare weather conditions with our Northern compatriots. The raison d'être for the event is emergency communications: "Amateur radio works when all else fails";.... And it works in all weather conditions.

Some things have changed, SPAR is no more, but the event continues under the auspices of the ARRL. This year; January 25, 2020, GARS set up two stations, one CW and one SSB. We used portable antennas and emergency power, in Gainesville, Florida's Westside Park. We cooked breakfast and lunch on site. Our event included interaction with the public: a local science teacher and his middle schoolers were having

class in the park during a site survey. A WUFT-TV reporter/journalism student interviewed our set-up team.

Despite issues with propagation, we made contacts in North America and Europe. Of special interest was the story told by a ham near Ottawa, Canada. He was operating in a cold war bunker under a military museum, connected to the outside world through ham radio. His daughter's planned visit to his subterranean lair had been stopped by icy roads. The antenna, thirty feet above his head was being blasted with static from the freezing rain. Piercing his isolation, a friendly voice from Florida floated in through the ether; bringing him the sounds of children playing, a balmy weather report, and the smell of burgers on the grill...This is the magic of radio! While this is a smaller event than Field Day, it is important. It prepares us for different operating conditions, and balances out the sweltering conditions we face in June. Happily, we avoided frostbite!



NVIS – Near Vertical Incident Skywave

by Bert Garcia N8NN

To achieve HF communication over the range of 20 to 200 miles, an antenna needs a high angle of radiation so the sky-wave will be reflected down a short distance from the transmitter. Vertical antennas have a low angle of radiation and are not suitable for NVIS. Horizontal dipoles close to the ground have a high angle of radiation and are good NVIS antennas. The 80 and 40 meter bands are suitable for NVIS – 40 in the daytime and 80 at night. 20 meters and above are not suitable for NVIS. Discussions about NVIS are found in the references at the end of this article.

One successful NVIS antenna is the military AS-2259 Antenna. It is two inverted-V dipoles at right angles to each other supported 8 to 15 feet high at the center. You can construct the antenna yourself following the suggestions in this article.

This version of the AS-2259 is made from two dipoles, one 50 feet long and one 76 feet long. They are mounted at right angles to each other and fed in the center directly with 50 ohm coax. Connect one leg of each dipole to the coax center conductor. Connect the other leg of each dipole to the coax shield. This is a non-resonate antenna, so an antenna tuner is required.

A top view of the antenna is shown in Figure 1.

NVIS 80-40 CROSSED INVERTED-V DIPOLES

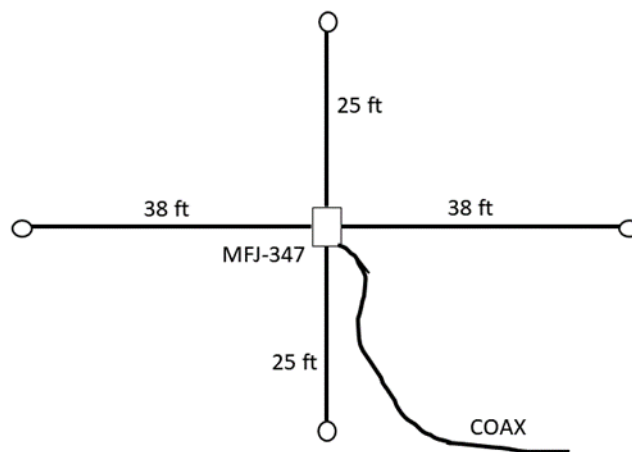


Figure 1. Top View

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A side view of each dipole is in Figures 2 and 3.

80 METER INVERTED-V DIPOLE

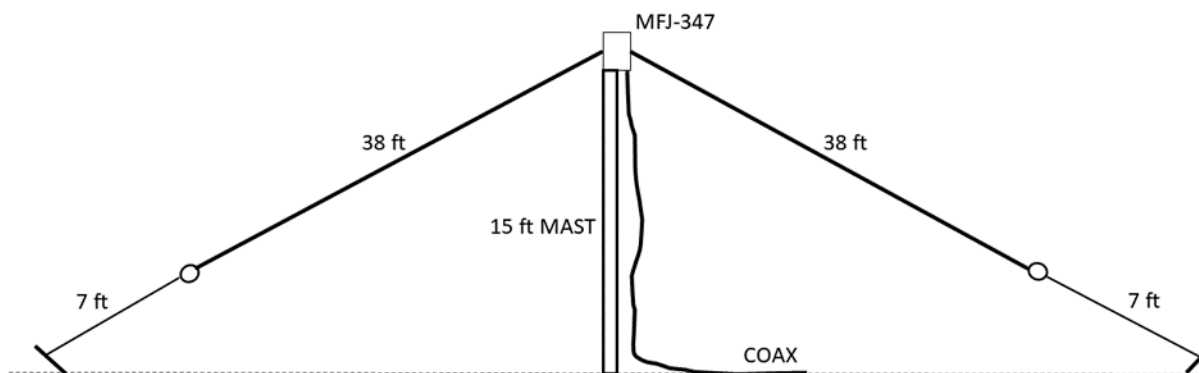


Figure 2. Side View, 80 meter dipole.

40 METER INVERTED-V DIPOLE

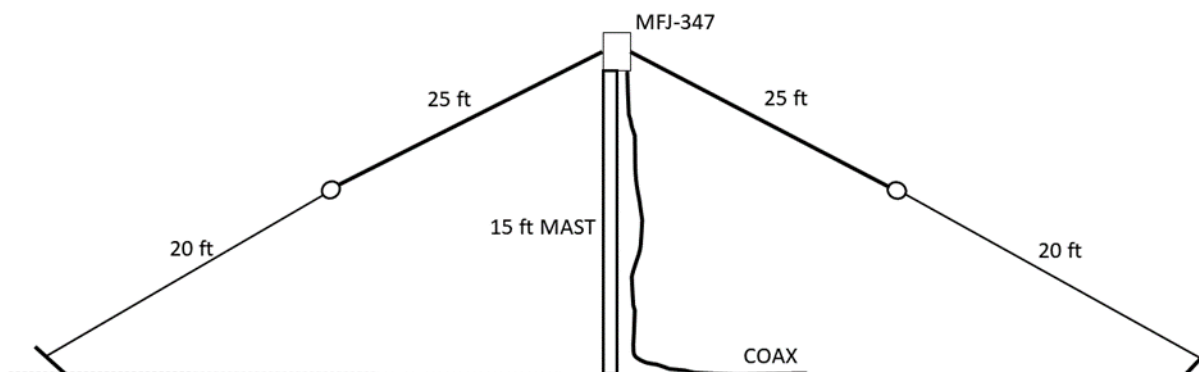


Figure 3. Side View, 40 meter dipole.

The center insulator is an MFJ-347 HF Stick Mini-Dipole Mount, but you may use any suitable center insulator you choose. The MFJ-347 was selected because it can clamp to a center support pole, has an SO-239 connector, and it has 3/8" x 24 threaded connectors to accept a bolt to attach the dipole wires. Figure 4 shows the MFJ-247 connector.

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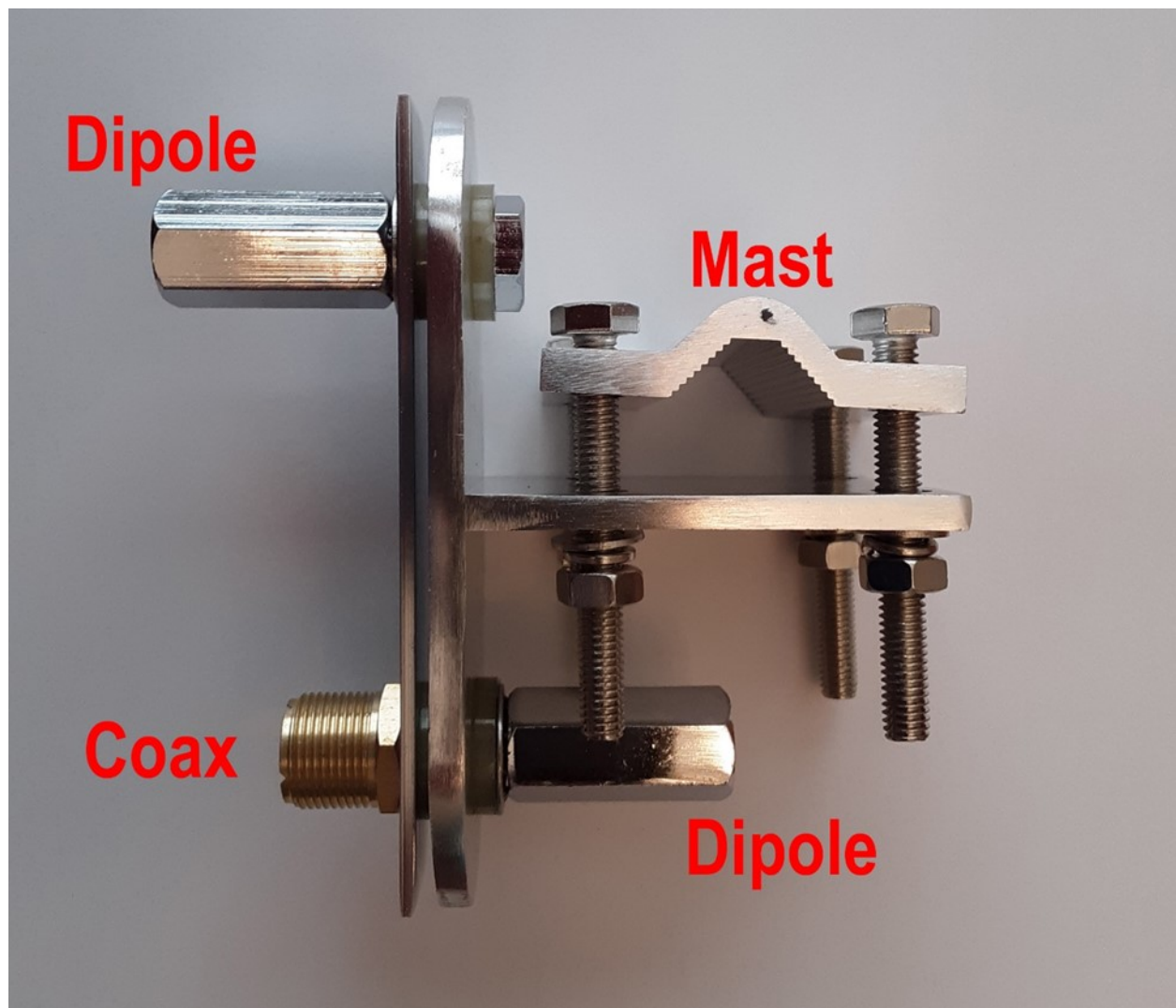


Figure 4. The MFJ-247 HF Stick Mini-Dipole Mount.

The center support should not be higher than 15 feet above ground or the high angle of radiation will be decreased. This antenna could be supported in the center by a rope from a tree; however, it may be easier to use an extendable painter's pole available from hardware stores as the support. The center support may be either non-conducting or conducting material. The coax feedline may be any convenient length, but 75 feet or more is recommended by some builders. Some builders recommend a 1:1 Unun at the feedpoint; however, the SWR coax losses on 80 and 40 meters are negligible. Almost any antenna tuner will match this antenna to 50 ohms, including most transceiver internal tuners.

This antenna is intended to be a portable temporary antenna, so select components for their light weight and easy of installation. Here is a list of materials to build a portable NVIS antenna.

Continued on next page...

Bill of Materials

126 feet of wire, plus 2 feet extra for connections

54 feet of rope, plus extra to meet site requirements

4 ea. tent pegs

4 ea. end insulators

1 ea MFJ-247 center connector or suitable substitute

2 ea. bolts and 4 ea. star washers to fit 3/8" x 24 connector on the MFJ-247

4 ea. eye-terminals for the dipole wires

1 ea. center support 8-15 feet painter's pole or suitable substitute Coax to reach from the antenna to the radio

You may find additional theory and recommendations from the references below. With a little ingenuity and a good junk box you can build a low-cost highly effective NVIS antenna.

Recommended Reading

1. NVIS HF Antenna Design, John Yaldwyn ZL4JY

<http://arec.info/wp-content/uploads/2017/04/NVIS-HF-Antenna-Design.pdf>

2. Near Vertical Incident Skywave, Wikipedia

https://en.wikipedia.org/wiki/Near_vertical_incidence_skywave

3. Near Vertical Incident Skywave (NVIS), ARRL video

<http://www.arrl.org/nvis>

4. Near Vertical Incident Skywave (NVIS) Antenna, DX Engineering

https://static.dxengineering.com/global/images/instructions/dxe-nvis-ins_sh.pdf

5. NVIS, Ham School LLC

<https://hamradioschool.com/nvis/>

6. AS-2259 Antenna Notes, Breckinridg Smith

<http://k4che.com/AS-2259%20Notes/AS-2259%20Page%201.htm>

Check out the NFL Website! Our thanks to Brian McClure, NW4R, web master!

ARRL – Northern Florida Section

Kevin Bess, KK4BFN – Section Manager

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NFL Section News

March 2020 QST NFL is posted.
March 5, 2020

QST NFL for March 2020 What's Inside.... Page 1 Loften High School Ham Club Recieves Award
Page 2 Emergency Communications Exercise Page 2 NFL Section Report Page 3 Five Flags ARA Activity
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[Read more](#)

March 2020 Net Rosters and Reports are posted
March 3, 2020

March 2020 NF-ARES Net Roster NFPN March 2020 Roster and Net Preamble NFPN February 2020 Net Reports

[Read more](#)

Upcoming Events

ARRL Field Day 2020
Jun 27, 2020 - Jun 28, 2020

[View All Events](#)

FCC Testing Information

4 Corners Radio Club, Davenport FL

- First Saturday
- 10:00 AM
- Polk County Firehouse, 50945 US 27
- Walk-ins welcome
- Info: WA2FRW@aol.com

Hog County Amateur Radio Association, Bushnell FL

- First Saturday, 11:00 AM, starting September 1, 2018
- Cross Connection Church, 1451 West County Road 476, Bushnell, FL 33513
- Info: sumterVE@gmail.com

Lake ARA, Leesburg FL

- Monthly on the 3rd Saturday, prior to monthly meeting. (Except December)
- 8:00 AM
- [LARA Clubhouse](#) (11146 Springdale Ave, Leesburg – off of CR 473)
- For more information and registration, contact: David A. Pennell, NP2MR (352) 602-5164 np2mr@yahoo.com in advance of the meeting.

Lake Monroe ARS FCC Testing, Sanford FL (LMARS)

Cancelled until further notice due to loss of venue because of COVID 19

- For more information and registration, contact Bob Cumming, W2BZY, 407-333-0690 or w2bzy@cfl.rr.com

Milton Amateur Radio Club, Milton FL

- Second Thursday of each even numbered month
- 6:30 PM
- Walk-in
- West Florida Hospital Rehab Institute, 8383 N Davis Hwy, Close to Johnson and N. Davis
- Info: Robert Speser, nb8s@icloud.com

Orlando ARC FCC Testing (OARC)

Cancelled until further notice due to loss of venue because of COVID 19

- Info: <https://oarc.org/events-ve-testing>

QCWA Chapter 45, Orlando FL

- Second Thursday
- 11:00 AM
- Golden Corral, 5535 S. Kirkman Ave, Orlando
- Walk-ins welcome
- Info: WA2FRW@aol.com

Silver Springs Radio Club, Ocala FL (SSRC)

- Go to <http://k4gso.us/class/> to signup for classes
- Go to <http://k4gso.us/test-signup/> for testing. Testing is held on the 2nd Tuesday of odd months at 7 PM.
- Note <http://k4gso.us/ncvec605/> is requested to be filled out before you show for testing. It is best to download the form and open it as a PDF so you can fill in the blanks.

Suwannee ARC, Live Oak, FL

- First Tuesday of the month prior to the meeting
- Saturdays available with advanced notice
- N4SVC, 9707 58th Street, Live Oak, FL 32060
- www.suwanneearc.org for more information

Tallahassee Amateur Radio Society (TARS)

- First Tuesday of each even numbered month
- 7:00 PM
- American Red Cross, 1115 Easterwood Drive, Tallahassee, FL
- Contact TARS : tallyamateurradio@gmail.com with questions
- Info: <http://www.k4tlh.net>

West Volusia Amateur Radio Society

- Second Saturday of each odd numbered month
- 9:00 AM
- Elks Lodge, 614 S. Alabama Avenue, Deland, FL
- Info: <https://westvars.org/testing>

**Due to the COVID 19 re-
strictions on gatherings,
please check with the or-
ganizations listed for
changes or cancellations.**

Remember: Bring photo ID, CSEs, copy of current license, exam fee in cash, \$15 exact change. Large print exams are available.

NFL Web Site

For net, hamfest and other events go to www.arrl-nfl.org. Webmaster Brian McClure, NW4R, maintains an up-to-date and detailed listing of all NFL nets and activities. If you need to make a change to an existing net or activity, or add a new one, you can contact Brian on the website.

NFL Officials

Section Manager – *Kevin Bess, KK4BFN*

Assistant Section Managers

Joseph D. Bushnel W2DWR

John C Reynolds W4IJJ

Dave Davis WA4WES

Jeff Capehart W4UFL

Neil Light KK4VHX

Ray Crepeau K1HG

Steve Szabo WB4OMM

Section Emergency Coordinator – *Karl Martin K4HBN*

Section Public Information Coordinator— *Scott Roberts KK4ECR*

Assistant SE Coordinator – *Robert A. Mitchell W4HKG*

Section Technical Coordinator – *Frank Haas KB4T*

Affiliated Club Coordinator – *Appointment Pending*

Section Traffic Manager – *Helen Straughn WC4FSU*

Official Observer Coordinator – *Robert Leasko, WB8PAF*

State Government Liaison – *Darrell Brock N4GOA*



Newsletter of the Northern Florida Section of the ARRL

1. Spread the word about our website www.arrl-nfl.org and **QST NFL** on your club web-site, in a newsletter or at a meeting.
2. Send a write-up and picture of your next activity.
3. Make sure you, or the appropriate member of your club is on the email reminder list.
4. Contact: Marty Brown N4GL, n4gl.marty@gmail.com

QST NFL is a monthly publication of the ARRL Northern Florida Section. **QST NFL** is intended for wide distribution within the NFL Section, including club Leaders and all licensed Amateurs in Florida. A current issue of this publication can be found at the ARRL Southeastern Division web site, Northern Florida Section. www.ARRL-NFL.org Opinions expressed by writers are their own, and may not express the positions of the ARRL. Submissions may be made to the editor, Marty Brown, N4GL.MARTY@gmail.com.